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# ASSOCIATE RATINGS AND SENIOR SERVICE SCHOOL SELECTION

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ASSOCIATE RATINGS AND SENIOR SERVICE  
SCHOOL SELECTION,

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## ASSOCIATE RATINGS AND SENIOR SERVICE SCHOOL SELECTION

### BACKGROUND

Interest in the use of associate ratings as a technique for officer selection has undergone a recent revival in the Army. Previous studies have demonstrated the validity of ratings made in precommissioning programs for later active-duty officer performance. A previous effort with Army colonels had demonstrated the feasibility and reliability of associate ratings at higher grade levels.<sup>1</sup> This study was an attempt to further demonstrate its usefulness at higher command levels.

In the fall of 1970 a student project (supervised by LTC D. M. Malone) at the Army War College (AWC) was developed to test the utility of associate ratings in selecting officers suitable for attendance at senior service colleges.<sup>2</sup> In the spring of 1971, AWC provided the data to the Army Research Institute (ARI) for additional analysis.

### OBJECTIVES OF THE STUDY

The primary objective was to determine the reliability of associate ratings and the relationship between ratings and board action for senior service college selection. An additional factor of two rater samples at different levels of military schools, AWC, peers, and Command and General Staff College (C&GSC) subordinates was studied to determine differential results.

<sup>1</sup> Medland, F. F., and Smith, K. Associate ratings of senior officer potential. ARI Research Problem Review, in press.

<sup>2</sup> Brock, L. A., and Wardrop, D. H. An examination of the selective use of peer ratings in officer selection procedures. U. S. Army War College: Carlisle Barracks, Pa. March 1971.

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## METHOD OF ATTACK

### RATING SCALES

Raters were asked to rate the ratee on two 5-point scales, degree of acquaintanceship and suitability for attendance. A rater was instructed to go through the roster and mark the names of all officers he was reasonably sure he recognized, then rate each of the officers on each of the two scales (see Appendix A for printed instruction sheet). Three scores were then derived for each officer.

$$1) \text{ Acquaintanceship: } A = \frac{\sum_{1}^n a}{n}$$

$$2) \text{ Suitability: } S = \frac{\sum_{1}^n s}{n}$$

$$3) \text{ Composite: } C = \frac{\sum_{1}^n (s-3) (.5) (a+1)+6}{n}$$

where a = rated degree of acquaintanceship

s = rated suitability

n = number of raters

The rationale for the composite score was that when acquaintanceship is high (level 5) the range of composite scores is greatest (0 to 12); with intermediate acquaintanceship (level 3), the range is intermediate (2 to 10); with low acquaintanceship (level 1), the range is least (4 to 8).

### SAMPLE

Ratees. The roster used was made up of all infantry officers eligible to attend a senior service college for the academic year of 1971-1972 (N = 1978). For the analysis only, this group was further broken down into three groups based on selection board action: a group not considered by the selection board (N = 1717); those considered

by the selection board but not selected (N = 164); and a group of officers selected by the board (N = 95). The selection board rank-ordered each of the selected officers from 1 to 95, with 1 the most preferred officer.

Raters. Two groups rated the officers on the roster. One (N = 57) was composed of all infantry officers attending the Army War College during 1970-71. Sample two (N = 235) consisted of all infantry officers attending Command and General Staff College during the same period.

#### METHOD OF ANALYSIS

The reliabilities of the ratings were estimated using the generalized formula for the reliability of averages:

$$r_{ii} = 1 - \frac{\sum \frac{\sigma_i^2}{n_i - 1}}{\sigma_N^2}$$

where

$\sigma_i^2$  = individual variance

$\sigma_N^2$  = rating variance

$r_{ii}$  = reliability

This index is generally a slight underestimate of the true reliability.<sup>3</sup>

Three average scores--Acquaintance, Suitability, and the Composite--were computed for each ratee for each rater group. Descriptive statistics and intercorrelations were developed for the six rating scores and board rank.

Four one-way analyses of variance were computed, with selection board action being the independent variable and rating scores the dependent variables.

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<sup>3</sup>Ebel, R. L. Estimation of the reliability of ratings. Psychometrika, 1951, 16, 407-424.

## RESULTS

### RELIABILITY

The number of raters and the mean scores for each officer in each sample were compiled. Table 1 is the summary of the number of ratings each ratee received in each sample. The percentage of ratees being rated by none or only one rater is 43.4% for the AWC and 34.8% for C&GSC. Note that if each ratee were to be rated by 5 raters, a more acceptable number, the raters from AWC would have had to rate 175 officers each and C&GSC raters 43 officers each.

Table 1

NUMBER OF RATEES BROKEN DOWN BY NUMBER OF RATINGS RECEIVED IN  
AWC AND C&GSC

Number of Raters	Number of Ratees	
	AWC	C&GSC
0	391	312
1	467	377
2	345	307
3	245	241
4	165	185
5	107	132
+5	258	424
TOTAL	1978	1978

The reliability of averages was computed for the suitability and acquaintanceship scales from each rater (school) sample using ratees receiving two or more ratings. The reliability index ( $r_{11}$ ) for suitability scores was .38 and .24 for the C&GSC and AWC samples respectively. Correcting the AWC index of  $r_{11} = .24$  for the fewer number of raters results in a comparable figure with the C&GSC sample. The acquaintanceship reliability ( $r_{11}$ ) was .12 and .17 respectively for the C&GSC and AWC samples. These indices are low and would seem to reflect the small number of raters per ratee.

## SCALE SCORE RELATIONSHIP

For any further analysis only officers with two or more ratings from both rating samples were included. Table 2 gives the percentages of officers included and excluded from the analysis, broken down by board action. The chi square of 28.86 was significant at less than a probability of .001 and indicates that a disproportionate share of officers considered by the board had received two or more ratings and were therefore included in the study. This would indicate a more widespread knowledge of these officers by the raters.

Table 2  
PERCENTAGE OF RATEES INCLUDED AND EXCLUDED FROM  
ANALYSIS, BROKEN DOWN BY BOARD ACTION

[Note: 383 individuals received less than two ratings from both schools]

Board Action	Group 1 <sup>a</sup>	Group 2 <sup>b</sup>	Total
Not Considered	1051 (61%)	668 (39%)	1719 (100%)
Not Selected	75 (46%)	89 (54%)	164 (100%)
Selected	38 (40%)	57 (60%)	95 (100%)
Total	1164	814	1978 $\chi^2=28.86^*$

\*  $p < .001$

<sup>a</sup> Group 1 = ratees with less than two ratings from either school - Excluded

<sup>b</sup> Group 2 = ratees with two or more ratings from both schools - Included

Table 3 gives the means, standard deviations and intercorrelations of the scores from each sample. Only officers receiving two or more ratings from both samples ( $N = 814$ ) were used. A small but significant positive relationship was found between degree of acquaintanceship and suitability scores ( $r=.19^{**}$  and  $r=.07^*$ ). Acquaintanceship had a significant relationship with the composite scores ( $r=.12^{**}$  and  $r=.13^{**}$ ) as compared to the extremely high correlation of suitability and the composite ( $r=.97^{**}$  and  $r=.98^{**}$ ). The formula for the composite score dictates the latter relationship, and the former relationship is a function of the correlation between suitability and acquaintanceship.

\*\*  $p < .01$

\*  $p < .05$

Table 3

DESCRIPTIVE STATISTICS AND INTERCORRELATIONS OF THE SIX  
SCALE SCORES FROM THE SAME OFFICERS RATED AT BOTH AWC AND C&GSC  
(N=814)

Variable <sup>a</sup>	Mean	S.D.	Inter-r's			
A <sub>1</sub>	3.26	.67	A <sub>1</sub>			
S <sub>1</sub>	2.70	.92	.19**	S <sub>1</sub>		
C <sub>1</sub>	5.48	2.15	.12**	.97**	C <sub>1</sub>	
A <sub>2</sub>	3.54	.64	.05	-.01	-.00	A <sub>2</sub>
S <sub>2</sub>	3.42	.89	.05	.29**	.29**	.07* S <sub>2</sub>
C <sub>2</sub>	7.06	2.21	.06	.28**	.29**	.13** .98** C <sub>2</sub>

<sup>a</sup> A = Acquaintanceship  
S = Suitability  
C = Composite  
1 = Army War College Sample  
2 = Command and General Staff College Sample

\*  $p < .05$

\*\* $p < .01$

The acquaintanceship scores were not related to each other or to other measures across samples ( $r = .05$ ). Suitability scores were moderately related to each other and to the composite scores across samples ( $r = .29^{**}$ ).

Table 4 details the means, standard deviations, and intercorrelations of scores (both samples) and selection board rank received; only officers selected for senior service school attendance were used ( $N = 57$ ). The pattern of relationship between scale scores was the same for this group as for the total group. Two correlations with board rank were significant, those with the suitability and composite scores from the AWC raters. Note

\*\*  $p < .01$

that the negative correlations indicated a positive relationship because a low ranking indicated the best officer. Ratings for C&GSC were not significantly related to board rank. There was little, if any, shrinkage in variance for the selected groups, and therefore correction for restriction of range was not deemed necessary. These results indicate that, first, the amount of interaction between rater-ratee was not a major contributor to the suitability scores. Second, the ratings from AWC but not C&GSC were related to board action. This indicated some common basis for evaluating officer performance for AWC raters (peers) and Selection Board Officers. Given the small number of officers in the selected group, this is an encouraging finding.

Table 4

DESCRIPTIVE STATISTICS AND INTERCORRELATIONS OF SIX SCALE  
SCORES AND BOARD RANK OF INDIVIDUALS SELECTED FOR SENIOR SERVICE COLLEGE  
(N=57)

Variable <sup>a</sup>	Mean	S.D.	Inter-r's						
A <sub>1</sub>	3.14	.72	A <sub>1</sub>						
S <sub>1</sub>	3.66	.84	.33*	S <sub>1</sub>					
C <sub>1</sub>	7.81	2.03	.33*	.98**	C <sub>1</sub>				
A <sub>2</sub>	3.43	.58	-.08	.10	.10	A <sub>2</sub>			
S <sub>2</sub>	3.95	.74	-.07	.33*	.35*	.31*	S <sub>2</sub>		
C <sub>2</sub>	8.23	1.85	-.06	.34**	.29*	.48**	.96**	C <sub>2</sub>	
Rank	47.25	29.89	-.12	-.29*	-.29*	.16	-.04	.01	Rank

<sup>a</sup> A = Acquaintanceship  
B = Suitability  
C = Composite  
1 = Army War College Sample  
2 = Command and General Staff College Sample  
Rank = Selection Board Ranking

\* p < .05

\*\* p < .01

#### MEAN DIFFERENCES FOR SELECT SUB-SAMPLES

Table 5 summarizes the means and standard deviations for the three scales broken down by school sample and board action. Three board action sub-samples were defined. The "not considered" group were officers eligible to attend but not considered by the board. (An unknown pre-selection procedure was used.) The "not selected" group were individuals considered by the board but not selected. Finally, the selected group were officers selected for attendance at a Senior Service School. Again, only officers with two or more ratings from both samples were used.

Table 6 gives the analysis of variances for each score using the above breakdowns. There were no significant differences found for the acquaintanceship scores. Suitability scores for the favorable action board groups (both AWC and C&GSC) were progressively higher, "selected group" greater than "considered" and "not selected" greater than "not considered." These results for both schools reinforce the previous positive finding between rank and ratings for AWC, by again indicating a positive relationship between the evaluation of officers by associates and the selection process. The  $\omega^2$ <sup>4</sup> reported in Table 6 represent the total variance accounted for in the dependent variable by the independent variable. The  $\omega^2$  of .121 for AWC is comparable to a correlation of .35 and the  $\omega^2$  of .043 for C&GSC to a correlation of .21. The composite scores, being a linear combination of suitability scores, would produce the same findings. Higher suitability scores produced by the C&GSC raters would seem to indicate a more lenient basis for evaluating performance for this group.

#### SUMMARY

Associate ratings from two samples of raters were obtained on officers eligible for Senior Service School attendance. Acquaintanceship and suitability ratings were collected and combined into a composite score. The reliabilities for both the suitability and acquaintanceship scores were found to be very low (.38 and .24 for suitability and .12 and .17 for acquaintanceship). If these reliabilities were increased, then the relationships found between suitability ratings and board action would become stronger. For raters receiving two or more ratings from each school it was found that: 1) acquaintanceship and suitability scores were moderately related to each other within a sample and not related across schools (samples); 2) the suitability scores were moderately related between schools ( $r=.29$ ) and that suitability scores for the AWC sample were related to board ranks assigned to selected officers

<sup>4</sup> Hays, W. L. Statistics. Holt, Rinehard and Winston: New York, 1963.

MEANS AND STANDARD DEVIATIONS OF RATINGS FOR OFFICERS SELECTED, NOT SELECTED, AND NOT CONSIDERED FOR ATTENDANCE AT A SCC BROKEN DOWN BY RATEES FROM BOTH SCHOOLS

	<u>ARMY WAR COLLEGE</u>				<u>COMMAND AND GENERAL STAFF COLLEGE</u>			
	NOT CONSIDERED	NOT SELECTED	SELECTED	TOTAL	NOT CONSIDERED	NOT SELECTED	SELECTED	TOTAL
<u>Acquaintanceship</u>								
$\bar{X}$	3.23	3.35	3.41	3.26	3.56	3.51	3.43	3.54
S.D.	.67	.65	.72	.67	.64	.64	.58	.64
$\bar{X}$	2.56	3.16	3.66	2.70	3.33	3.72	3.95	3.42
S.D.	.88	.77	.84	.92	.89	.79	.74	.89
<u>SUITABILITY</u>								
$\bar{X}$	5.14	6.56	7.81	5.48	6.87	7.79	8.23	7.07
S.D.	2.02	1.89	2.03	2.15	2.22	1.95	1.85	2.21
<u>COMPOSITE</u>								
number	668	89	57	814	668	89	57	814

Table 6

ANALYSIS OF VARIANCE FOR EACH SCHOOL AND ACROSS BOARD ACTION  
FOR ACQUAINTANCESHIP AND SUITABILITY SCORES

<u>AWC</u> <u>Acquaintanceship</u>				
<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Board Action	2.44	2	1.22	2.71
Error	366.89	811	.45	
<u>Suitability</u>				
<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Board Action	85.60	2	42.80	57.07**
Error	604.57	811	.75	$\omega^2 = .121$
<u>C&amp;GSC</u> <u>Acquaintanceship</u>				
<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Board Action	1.12	2	.56	1.37
Error	330.32	811	.41	
<u>Suitability</u>				
<u>Source</u>	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>
Board Action	29.52	2	14.76	19.47**
Error	617.86	811	.76	$\omega^2 = .043$

\*\*p < .01

( $r=-.29$ ); 3) the C&GSC sample produced higher suitability scores than the AWC sample; and 4) the officers selected by the board were rated more suitable as a group by associates than officers not selected and not considered. There was agreement between the board and raters on the most qualified officer. These results indicate that the inclusion of an associate rating score as part of the selection process would add new sources of information which are not totally at variance with present procedures.

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## APPENDIXES

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## APPENDIX A - SURVEY INSTRUCTIONS

PLEASE ENTER YOUR  
STUDENT BOX NO. \_\_\_\_\_  
AND GRADE: O- \_\_\_\_\_

MESSAGE CENTER: RETURN TO  
COL D. H. WARDROP  
Box 191, USAWC

### SURVEY: SELECTION FOR SENIOR SERVICE COLLEGE

The objective of this survey is to get an indication of the possible use of peer ratings for assisting in the selection of Army officers for attendance at a senior service college. For the purpose of this survey you are considered a peer of every officer on the enclosed roster.

The enclosed roster contains all infantry officers in the zone of eligibility to be selected to attend one of the senior service colleges during the academic year 1971-1972. Request you perform the following three actions regarding this roster:

1. As step #1: Underline each name that you are reasonably sure you recognize. Then perform the next two actions jointly as step #2.

2. ASSOCIATION: There are innumerable ways one person can "know" another. The scale below does not include all possible variations, but rather its purpose is to provide an indication of how well you know the individual concerned. From the scale, please select the choice which best represents your association with the individual whose names you have underlined. Do not be overly concerned with how long the relationship has existed. (For each name underlined, enter appropriate number (1-5) in "Association" column.)

I know individual by:

1. Reputation and/or 1-2 personal contacts.
2. Minimum social and/or professional contact.
3. Occasional social and/or professional contact.
4. Frequent social and/or professional contact.
5. Close and frequent social and/or professional contact.

3. SUITABILITY: In this operation, please indicate your opinion of the individual's suitability for attendance at a senior service college.

APPENDIX A (continued)

Do not consider how well you know the person—this will be accounted for in the association scale above. As a general criterion, consider that those who attend the senior service colleges will probably move upward in the Army to positions of greater responsibility. (For each name underlined, enter appropriate number (1-5) in "Suitability" column.)

In my opinion, this individual should be:

1. Not selected.
2. Selected later if warranted by records.
3. Selected next year.
4. Selected as an alternate or standby this year.
5. Selected immediately.

Please use the following guidance in completing your roster:

1. There is no limit on the number of officers you select for any year, or reject.
2. There are no "tricks" or hidden meanings in this survey. Complete the roster in a judicious, straightforward manner.
3. If you are aware of any personal desires of the officer under consideration, do not take these into account. Make a selection or rejection based on the officer's professional qualifications and potential as you know them.

I have requested your box number on the first page of the survey for my use in case of questions after you return it to me. I shall treat your completed response as confidential and request you also treat it in a confidential manner. Please do not discuss your response with other students. As information from your response is transferred to data cards, your identification with the roster will cease, and the names of the individuals on the roster will be dropped and will be represented by a code number in all scoring, analysis, and presentations of results.

Thank you.

# APPENDIX B

## COMPOSITE SCORES FOR ALL COMBINATIONS OF ACQUAINTANCESHIP AND SUITABILITY SCORES

$$\text{Formula: Composite} = \frac{\sum_{i=1}^n (s-3)(.5)(a+1)+6}{n}$$

SUITABILITY SCORE	ACQUAINTANCESHIP SCORE	COMPOSITE SCORE
1	5	0
1	4	1
1	3	2
1	2	3
1	1	4
2	5	3
2	4	3.5
2	3	4
2	2	4.5
2	1	5
3	1	6
3	2	6
3	3	6
3	4	6
3	5	6
4	1	7
4	2	7.5
4	3	8
4	4	8.5
4	5	9
5	1	8
5	2	9
5	3	10
5	4	11
5	5	12